

Program of AD2012

Venue: Clark Building, Room A201

Monday, July, 23rd

12:00 - 13:15	Registration (for later registrations please ask the organizers for a paper form)
13:15 - 13:30	Welcome
13:30 - 15:30	Session 1 <ul style="list-style-type: none">• Invited Talk: Luca Capriotti (Credit Suisse, New York City, USA): <i>Algorithmic Differentiation: extending the frontiers of computational finance and risk management</i>• Ralf Giering, Michael Voßbeck (FastOpt GmbH, Hamburg, Germany): <i>Increasing Memory Locality by Executing Several Model Instances Simultaneously</i>• Valérie Pascual, Laurent Hascoët (INRIA Sophia-Antipolis, France): <i>Native Handling of Message-Passing Communication in Data-Flow Analysis</i> Chair: Naumann
15:30 - 16:00	Coffee Break
16:00 - 17:30	Session 2 <ul style="list-style-type: none">• Johannes Lotz, Uwe Naumann (RWTH Aachen, Germany); Jörn Ungermann (Research Center Jülich GmbH, Jülich, Germany): <i>Hierarchical Algorithmic Differentiation a Case Study</i>• Kamil A. Khan, Paul I. Barton (MIT, Cambridge MA, USA): <i>Evaluating an Element of the Clarke Generalized Jacobian of a Piecewise Differentiable Function</i>• Jeffrey A. Fike, Juan J. Alonso (Stanford University, Palo Alto CA, USA): <i>Automatic Differentiation Through the Use of Hyper-Dual Numbers for Second Derivatives</i> Chair: Bischof

Tuesday, July, 24th

08:30 - 10:30	Session 3 <ul style="list-style-type: none">• Invited Talk: Markus Püschel (ETH Zurich, Switzerland): <i>Program Synthesis for Performance</i>• Johannes Willkomm, Christian Bischof (Technical University Darmstadt, Germany), H. Martin Bücker, (RWTH Aachen, Germany): <i>The Impact of Dynamic Data Reshaping on Adjoint Code Generation for Weakly-Typed Languages Such as Matlab</i>• Alexey Radul, Barak A. Pearlmutter (National University of Ireland, Maynooth, Ireland), Jeffrey Mark Siskind (Purdue University, West Lafayette IN, USA): <i>AD in Fortran: Implementation via Preprocessor</i> Chair: Hascoët
10:30 - 11:00	Coffee Break
11:00 - 12:30	Session 4 <ul style="list-style-type: none">• Beckers, Markus, Viktor Mosenkis, Uwe Naumann (RWTH Aachen, Germany): <i>Adjoint Mode Computation of Subgradients for McCormick Relaxations</i>• Andrea Walther (University of Paderborn, Germany): <i>On the Efficient Computation of Sparsity Patterns for Hessians</i>• Benjamin Letschert, Kshitij Kulshreshtha, Andrea Walther (University of Paderborn, Germany), Duc Nguyen, Assefaw Gebremedhin, Alex Pothen (Purdue University, West Lafayette IN, USA): <i>Exploiting Sparsity in Automatic Differentiation on Multicore Architectures</i> Chair: Griewank
12:30 - 13:30	Lunch Break
13:30 - 15:30	Session 5 <ul style="list-style-type: none">• Invited Talk: Andreas Griewank (Humboldt University Berlin, Germany): <i>On Stable Piecewise Linearization and Generalized Algorithmic Differentiation</i>• David C. Carothers, Stephen K. Lucas, G. Edgar Parker, Joseph D. Rudmin, James S. Sochacki, Roger J. Thelwell, Anthony Tongen, Paul G. Warne (James Madison University, Harrisonburg VA, USA): <i>Connections Between Power Series Methods and Automatic Differentiation</i>• Bruce Christianson (University of Hertfordshire, Hatfield, UK): <i>A Leibniz Notation for Automatic Differentiation</i> Chair: Utke
15:30 - 16:00	Coffee Break

16:00 - 17:00 **Session 6** • [Daniel R. Reynolds](#) (Southern Methodist University, Dallas TX, USA), [Ravi Samtaney](#) (King Abdullah University of Science and Technology, Thuwal, Saudi Arabia):
 Chair: *Sparse Jacobian Construction for Mapped Grid Visco-Resistive Magnetohydrodynamics*
 Forth • [Emre Özkaya](#), [Anil Nemili](#), [Nicolas R. Gauger](#) (RWTH Aachen, Germany):
Application of Automatic Differentiation to an Incompressible URANS Solver

17:00 - 19:00 Poster Session - Chair: Norris – starts with poster introductions in A201

Wednesday, July, 25th

08:30 - 10:30 **Session 7** • **Invited Talk:** [Mary Hall](#) (University of Utah, Salt Lake City UT, USA):
 Chair: *Autotuning Compiler and Language Technology and its Role in Exascale Systems*
 Hovland • [Peder A. Olsen](#), [Steven J. Rennie](#), [Vaibhava Goel](#) (IBM, TJ Watson Research Center, Yorktown Heights NY, USA): *Efficient Automatic Differentiation of Matrix Functions*
 • [Torsten Bosse](#), [Andreas Griewank](#) (Humboldt University Berlin, Germany):
The Relative Cost of Function and Derivative Evaluations in the CUTer Test Set

10:30 - 11:00 Coffee Break

11:00 - 13:00 **Session 8** • **Invited Talk:** [Bert Speelpenning](#) (MathPartners Inc., Seattle WA, USA):
 Chair: *An Idea Whose Time Had Come*
 Phipps • [Kshitij Kulshreshtha](#) (University of Paderborn, Germany) [Jan Marburger](#) (Fraunhofer Institute for Industrial Mathematics Kaiserslautern, Germany):
Computing Derivatives in a Meshless Simulation 1 Using Permutations in ADOL-C
 • [Rami M. Younis](#) and [Hamdi A. Tchelepi](#) (Stanford University, Stanford CA, USA): *Lazy K-Way Linear Combination Kernels for Efficient Runtime Sparse Jacobian Matrix Evaluations in C++*

13:00 - Lunch – **Social Event:** hiking / brewery tour

Thursday, July, 26th

08:30 - 10:30 **Session 10** • **Invited Talk:** [Don Estep](#) (Colorado State University, Fort Collins CO, USA):
 Chair: *The use of adjoints for error estimation and uncertainty quantification*
 Gay • [Ahmad Bani Younes](#), [James Turner](#) (Texas A&M University, College Station TX, USA), [Manoranjan Majji](#) (University at Buffalo, Buffalo NY, USA), [John Junkins](#) (Texas A&M University, College Station TX, USA): *High-Order Uncertainty Propagation Enabled by Computational Differentiation*
 • [James A. Reed](#), [Hany S. Abdel-Khalik](#) (North Carolina State University, Raleigh NC, USA), [Jean Utke](#), (Argonne National Laboratory/University of Chicago, USA):
Combining Automatic Differentiation Methods for High-Dimensional Nonlinear Models

10:30 - 11:00 Coffee Break

11:00 - 12:30 **Session 11** • [Phuong Pham-Quang](#) (CEDRAT S.A., Meylan Cedex, France), [Benoit Delinchant](#) (Grenoble Chair: Electrical Engineering Laboratory, Saint-Martin d'Hères, France):
 Pryce *Java Automatic Differentiation Tool Using Virtual Operator Overloading*
 • [Abhishek Kr. Gupta](#) (IIT Kanpur, Kanpur UP, India), [Shaun A. Forth](#) (Cranfield University, Shrivenham, UK): *An AD-Enabled Optimization ToolBox in LabVIEW™*
 • [Joel Andersson](#) (K.U. Leuven, Heverlee, Belgium), [Johan Åkesson](#) (Lund University, Sweden), [Moritz Diehl](#) (K.U. Leuven, Heverlee, Belgium):
CasADi: A Symbolic Package for Automatic Differentiation and Optimal Control.

12:30 - 13:30 Lunch Break

13:30 - 15:30 **Session 12** • **Invited Talk:** **Barbara Kaltenbacher** (University of Klagenfurth, Austria):
 Chair: *Inverse Problems - Applications and Solution Strategies*
 Walther • **Azamat Mametjanov**, **Boyana Norris**, **Xiaoyan Zeng**, **Beth Drewniak**, **Jean Utke**, **Mihai Anitescu**,
Paul Hovland (Argonne National Laboratory):
Applying Automatic Differentiation to the Community Land Model
 • **Claire Lauvernet**(Irstea, UR MALY, Lyon, France), **Laurent Hascoët** (INRIA Sophia-Antipolis,
 France), **François-Xavier Le Dimet** (University of Grenoble, France), **Frédéric Baret** (INRA,
 Avignon, France): *Using Automatic Differentiation to Study the Sensitivity of a Crop Model*

15:30 – 16:00 Coffee Break

16:00 – 17:00 **Session 13** • **Heather Cole-Mullen** (University of Chicago, USA), **Andrew Lyons** (Dartmouth College, Hanover
 Chair: NH, USA), **Jean Utke** (Argonne National Laboratory):
 Kubota *Storing Versus Recomputation on Multiple DAGs*
 • **Thomas F. Coleman**, **Xin Xiong** (University of Waterloo, Canada), **Wei Xu** (Tongji University,
 Shanghai, China): *Using Directed Edge Separators to Increase Efficiency in the Determination of
 Jacobian Matrices via Automatic Differentiation*

18:00 - **Social Event** - Conference dinner

Friday, July, 27th

08:30 - 10:30 **Session 14** • **Invited Talk:** **Lorenz Biegler** (Carnegie Mellon University, Pittsburgh PA, USA):
 Chair: *Optimization of Pressure Swing Adsorption: A Case Study for Automatic Differentiation*
 Walther • **Jieqiu Chen**, **Paul Hovland**, **Todd Munson**, **Jean Utke** (Argonne National Laboratory, USA):
An Integer Programming Approach to Optimal Derivative Accumulation
 • **Sri Hari Krishna Narayanan**, **Boyana Norris**, **Paul Hovland** (Argonne National Laboratory), **Assefaw
 Gebremedhin** (Purdue University, West Lafayette IN, USA):
Implementation of Partial Separability in a Source-to-Source Transformation AD Tool

10:30 - 11:00 Coffee Break

11:00 - 12:00 **Session 15** • **Marco Nehmeier** (University of Würzburg, Germany):
 Chair: *Generative Programming for Automatic Differentiation*
 Bell • **Eric Phipps**, **Roger Pawlowski** (Sandia National Laboratory, USA):
Efficient Expression Templates for Operator Overloading-Based Automatic Differentiation

12:00 - 12:30 Discussion: plans for AD2016 / EuroAD workshops / minisymposia - closing remarks

Last modified: July 19, 2012, AD2012 Organizing Committee

Please check also the AD2012 conference web page at
<http://www.autodiff.org/ad12>